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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/801,812	02/14/97	GIVENS J	11675.106

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EXAMINER	
EATON, K	
ART UNIT	**PAPER NUMBER**
2823	7

DATE MAILED: 11/26/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 08/801,812	Applicant(s) GIVENS, JOHN H.	
	Examiner Kurt M Eaton	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

1)☒ Responsive to communication(s) filed on *30 August 1999* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28 and 36-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-28 and 36-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a)☐ All b)☐ Some * c)☐ None of the CERTIFIED copies of the priority documents have been:

1.☐ received.

2.☐ received in Application No. (Series Code / Serial Number) _____ .

3.☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

14) ☒ Notice of References Cited (PTO-892)
15) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
16) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
17) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
18) ☐ Notice of Informal Patent Application (PTO-152)
19) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madokoro in view of Fiordalice '072, as previously applied.

3. Claims 16 and 23 now specify depositing an energy absorbing layer on the electrically conductive layer, wherein the energy absorbing layer having a greater thermal absorption capacity than that of the electrically conductive layer.

4. Claims 12, 13, 15-20, 22, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madokoro in view of Fiordalice 072 as applied to claim 1 above, and further in view of Fiordalice 523, as previously applied.

5. Claims 14 and claims 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madokoro in view of Fiordalice 072 as applied to claim 1 above, and over Madokoro in view of Fiordalice 072 and Fiordalice 523 as applied to claim 16 above, respectively and further in view of Kataoka, as previously applied.

6. Claims 24 and 28 now specify depositing an energy absorbing layer of the layer composed of aluminum, wherein the energy absorbing layer has a greater thermal absorption capacity than that of the layer composed of aluminum.

7. Claims 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madokoro in view of Fiordalice 072 and Fiordalice 523 as applied to claim 16 above, and further in view of Sirkin, as previously applied.

8. Claims 36-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Madokoro in view of Fiordalice 072, as previously applied.

Madokoro in view of Fiordalice 072, as previously applied, however, does not show wherein the electrically conductive layer is composed of copper; or wherein the seed layer includes multiple layer, wherein each layer in the multiple layers is made of a material selected from the group consisting of silicon and titanium nitride.

Fiordalice 072 shows forming an electrically conductive layer made of either aluminum or copper material {column 2, line 56 - column 3, line 43; column 4, line 18 - column 5, line 4}.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the electrically conductive line out of Madokoro out of copper as suggested in Fiordalice 072 since, as evidenced by Fiordalice 072, copper is a well known electrically conductive that may be formed within the recess of a dielectric layer. Copper is also a well known material that reflects light better than the energy absorbing layer of Madokoro and would thus not have as great a capacity to absorb heat as the energy absorbing layer of Madokoro. Finally, it would have been obvious to form the seed layer of Madokoro in view of Fiordalice 072 such that the seed layer included multiple layers wherein each layer of the multiple layers was made of titanium nitride since more seed layers within the recess would have provided better protection of the materials lying beneath the seed layer. Additionally, the formation of multiple seed layers would have required a mere duplication of steps and mere duplication of essential working steps of a process involves only

routine skill in the art. Furthermore, the specification contains no disclosure of either the critical nature of the claimed multiple seed layers or any unexpected results arising therefrom. Where patentability is said to be based upon a particular structure or upon another element recited in a claim, the applicant must show that the chosen structures are critical.

Response to Arguments

9. Applicant's arguments filed 8/30/99 have been fully considered but they are not persuasive.

In re applicants assertion that Madokoro's Al alloy film has much more mass than the anti-reflective film and therefore Madokoro's anti-reflective film lacks the thermal mass of the Al film, the examiner respectfully submits that there is simply no support in the applicants originally filed specification to support the conclusion that the thermal absorption, as defined in the originally filed specification, of a metal film is related to its thickness. More specifically, at page 11, lines 5-10 of applicants specification, the applicant suggests that a metals' "energy absorbing " capability is related only to its thermal conductivity and its melting point – two material properties which are not dependent upon a particular dimension of how that metal layer is found.

In response to applicants argument that Madokoro focuses on light absorption efficiency and not on heat absorption, it is the examiners sustained contention that heat absorption of anti-reflective films is directly linked to light absorption efficiency. Since Madokoro's "light absorbing" layer (19) is made out of the same material as applicants own "energy absorbing", as instantly claimed, the two layers would obviously have the same material properties (i.e., same ability to absorb thermal energy, according to applicants definition). Note also, that the materials used in the anti-reflective layer of Madokoro do have a higher melting point than the electrically conductive

materials of Madokoro, and Fiordalice 072. Therefore since materials such as TiN , W, and TiW are anti-reflective materials, they would also act to "absorb" (according to applicant definition already discussed) thermal energy so as to conduct the thermal energy (heat) into electrically conductive material that had a lesser capability to "absorb thermal energy".

See prior art reference U.S. PAT. No. 5,409,862 (Wada et al.) for evidence of the state of the art in which an anti-reflective layer is known to be an energy absorbing layer {column 19, lines 25-40; column 26, lines 9-12; see also Figure 23}.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Paper related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is

(703) 308-7722 or **–7724**. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication of earlier communication from the examiner should be directed to **Kurt Eaton** at **(703) 305-0383** and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via kurt.eaton@uspto.gov.

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